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Current Economic Analysis I-**36**

Fish Meal and Oil Market Review

Washington, D.C.
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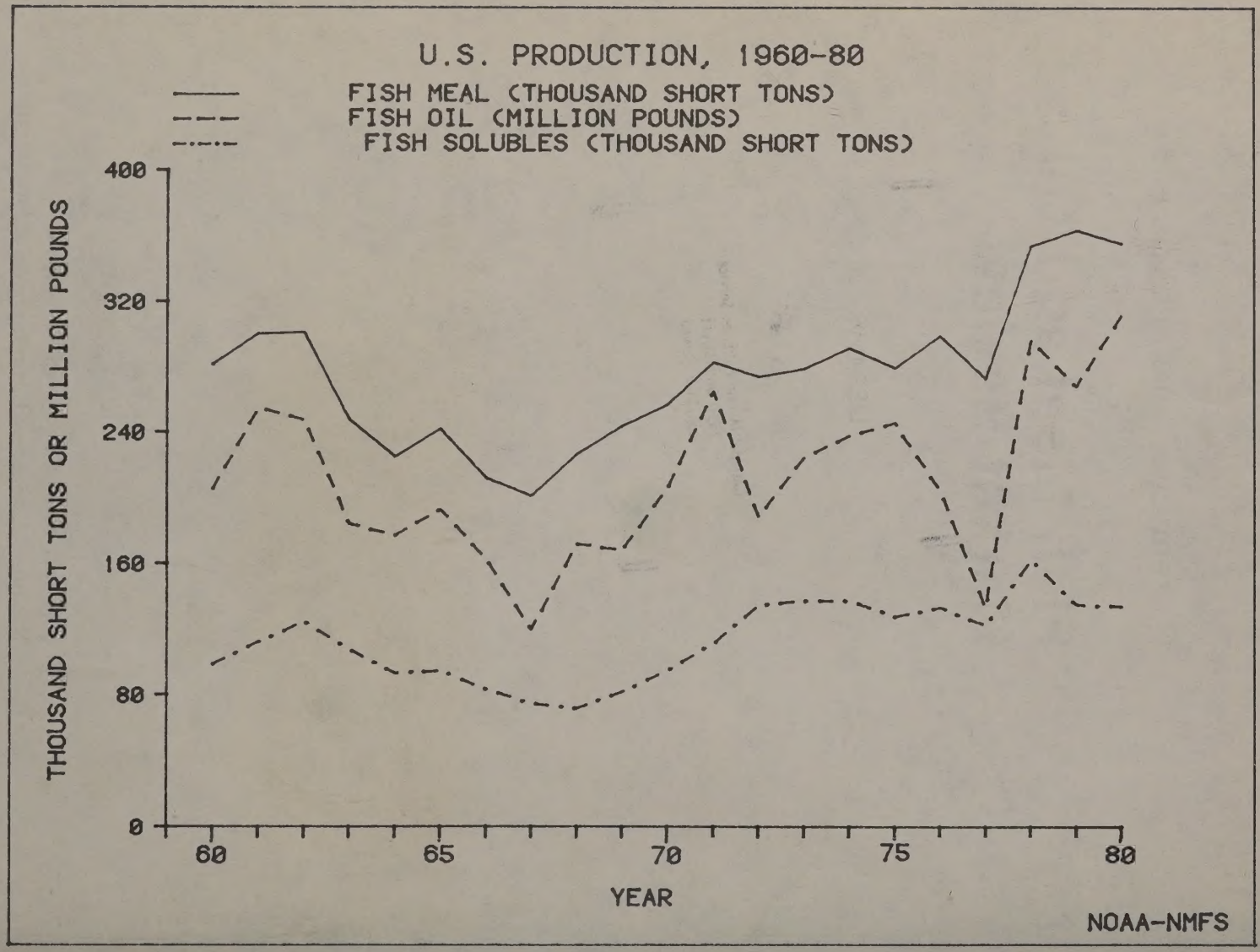
U.S. PRODUCTION, 1960-80
FISH MEAL (THOUSAND SHORT TONS)
FISH OIL (MILLION POUNDS)
FISH SOLUBLES (THOUSAND SHORT TONS)
THOUSAND SHORT TONS OR MILLION POUNDS
400
320
240
160
80
0
60
65
70
75
80
YEAR
NOAA-NMFS

FISH MEAL AND OIL MARKET REVIEW

U.S. DEPARTMENT OF COMMERCE
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SUMMARY

U.S. production and exports of fish meal and oil were high in 1980, while world production and exports were closer to year-earlier levels. Ample domestic supplies and favorable domestic-foreign price relationships encouraged exports. U.S. exports of both fish meal and oil reached record levels in 1980. U.S. exports continued high in early 1981 on the basis of carryover stocks, as production was seasonally low. U.S. imports of fish meal were low in 1980. Because of this and high exports, the United States was a net exporter of fish meal, as in 1978.

Prices of fish meal and other competing high-protein meals strengthened significantly during 1980, but weakened somewhat late in the year and in early 1981. Prices of fish oil continued the downward trend which began in 1977. They exhibited expected seasonal patterns, and they reflected the influence of strong movements in prices of soybean and other oils in 1979-81.

OUTLOOK

The outlook is for lower U.S. production and exports of fish meal and oil in 1981 than in 1980, judging from forecasts by NMFS biologists for 5 percent lower menhaden landings, the dominant raw material. World production and exports of fish meal and oil are likely to be slightly lower in 1981 than in 1980. This outlook for lower U.S. and world supplies suggests price strength for fish meal and oil in 1981, but much depends on whether declines continue in prices of competing products. Those declines relate to high output and exports of soybean products in Argentina and Brazil, lower animal numbers, high oil stocks here and abroad, strengthening of the dollar against certain foreign currencies, and continued high interest rates, all of which tend to depress prices, despite the low U.S. soybean crop.

FISH MEAL

U.S. production of fish meal was high in 1980. This, plus lower world supplies and favorable domestic-foreign price relationships, encouraged record exports and low imports. The United States was a net exporter in 1980, as in 1978. Prices of fish meal strengthened significantly during 1980, along with prices of competing high-protein meals, but prices of all high-protein meals weakened somewhat in late 1980 and early 1981.

Domestic Production High

Total U.S. production of fish meal (excluding shellfish meal) during 1980 reached 355,300 short tons, the third highest level in history (table 1). This total fell 2 percent below the record production of 1979, but was 19 percent above the 1974-78 average.

Table 1.--Supply and use of fish meal (excluding shellfish meal), 1974-78 average, 1979 and 1980

Component	1974-78 average	1979	1980
	Thousand short tons		
Production			
Menhaden	215.5	280.8	271.2
Anchovy	17.0	9.9	7.8
Tuna-mackerel	43.1	47.4	47.0
Unclassified	23.8	25.2	29.3
Total	299.4	363.3	355.3
Imports	90.5	89.6	49.5
New supplies	389.8	452.9	404.8
Exports	37.4	15.7	85.3
Net supplies	352.4	437.2	319.5

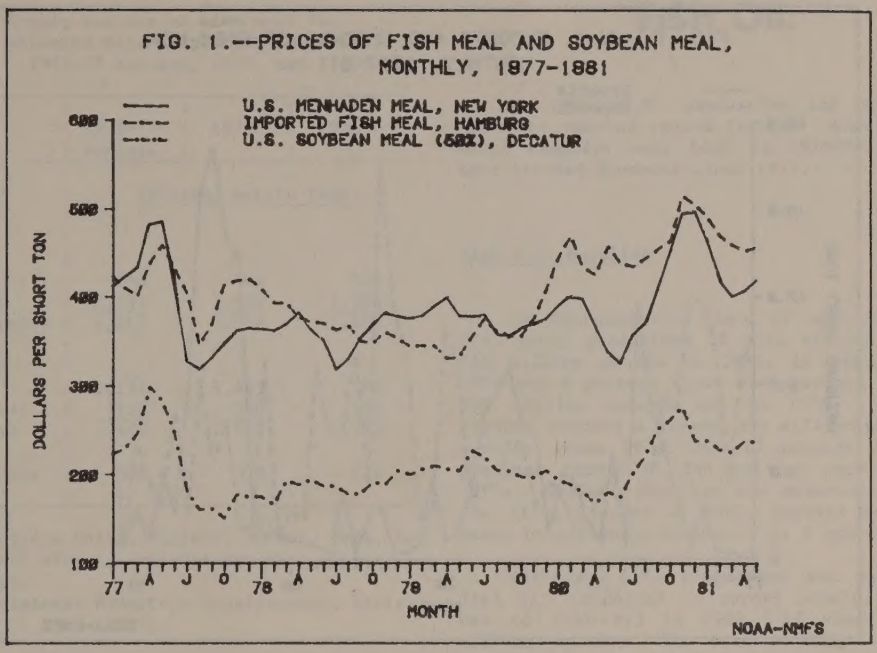
The most important factor in this decline from 1979 was a drop in menhaden landings. Landings in the Gulf of Mexico were 1,548 million pounds, 10 percent less than in 1979. On the Atlantic Coast, in contrast, the catch of 949 million pounds exceeded the 1979 level by 7 percent and was the highest since the early 1960s. The decline in the Gulf more than offset this increase, however, causing the total production of menhaden meal in 1980 to fall to 271,200 short tons, 3 percent below that of 1979, but 26 percent above the 1974-78 average.

A decline in production of anchovy meal in 1980 also contributed to the overall decline in production, but it was partially balanced by an increase for unclassified fish meal. Anchovy meal production of 7,800 short tons was 21 percent below that of 1979, and 54 percent below the 1974-78 average. Responsible for this drop was a decline in total landings for the 1979-80 season, which ended on June 30, 1980. Landings fell far below the allowed quota of 156,100 short tons. Despite a better catch rate at the beginning of the new season, which started on August 1, anchovy receipts for reduction during all of 1980, and hence anchovy meal production, were down significantly from year-earlier levels. Production of tuna-mackerel meal in 1980, 47,000 short tons, was down slightly from a year earlier and 9 percent above the 1974-78 average. As for unclassified fish meal, its high 1980 production level of 29,300 short tons partially offset the declines sustained in the major species categories. This amount represents an increase of 16 percent over the corresponding quantity in 1979, and an increase of 23 percent over the 1974-78 average.

Record Exports and Low Imports

Record exports of fish meal, along with low imports, made the United States a net exporter of fish meal during 1980. Exports of 85,300 short tons were about 5-1/2 times the 1979 level, and 54 percent above those of 1974, the previous record year. Imports, on the other hand, fell to 49,500 short tons, 45 percent below those of 1979, and also 45 percent below the 1974-78 average.

The increase in exports was due in part to the prices of fish meal in Europe relative to prices in the United States, in conjunction with the weakness of the U.S. dollar. A comparison in dollars of the domestic menhaden meal price with the price of fish meal in Europe, represented by the price in Hamburg, points out this relationship clearly (fig. 1). During early 1979, when the U.S. price was higher than the Hamburg price, and continuing through late 1979, when the two prices were about equal, the quantity of U.S. fish meal exports was quite low. However, in December 1979, the European price strengthened significantly more than the U.S. price. A sizable margin between the two prices persisted throughout most of 1980, until a strong upward movement in the U.S. price effectively closed the gap in October. The two prices remained closer through December 1980. This situation was mirrored in the pattern of U.S. exports. By April-May 1980, the higher



price abroad was drawing sizable quantities of fish meal into the export market. Exports of fish meal, which went in large measure to Western Europe, continued high until the autumn, and by December had fallen back to the low levels of the beginning of the year (fig. 2).

Among the buyers of U.S. fish meal, West Germany was by far the largest in 1980 with a record total of 49,000 short tons, 131 percent above the 1974-78 average. West Germany has traditionally been the most important buyer, although in 1979 shipments dropped to less than 1,000 short tons. United States shipments to Egypt, the leading buyer in 1979, rose slightly in 1980, ranking that country second with a total of 10,000 short tons. Other important buying countries in 1980 were Italy (a non-traditional buyer), the Philippines, and Taiwan.

The low level of U.S. imports in 1980 was partially caused by supply limitations on the part of the major world exporters. Peru, which had been the leading supplier in 1979 and during the early 1970s, accounted for only 6,600 short tons in 1980, a drop of 77 percent from 1979. Similarly, imports from Norway fell to nearly zero from a sizable 12,000 short tons in 1979. Imports from Canada totaled 24,000 short tons in 1980, a drop of 11 percent from the 1979 level. Despite this decline, Canada, a consistent supplier, held first place among suppliers in 1980. Almost half of the Canadian product was herring meal, valued for its especially high protein content. Shortfalls in shipments from traditional suppliers were partially balanced by an increase in imports from Panama. Panamanian meal, made principally from anchovy, accounted for 18,000 short tons of imports in 1980, an increase of 37 percent over 1979. Panama has become an increasingly important supplier, ranking second in 1980.

During the first quarter of 1981, imports remained low, but exports were high. Exports were well above a year earlier and the 1975-79 average (table 2). Most of the increase from a year earlier occurred in March 1981, when exports moved well above the levels of October 1980 through February 1981, reflecting in part the recurrence of wider margins between European and U.S. prices that existed during most of 1980 (figures 1 and 2). The exports were from carryover stocks, as first-quarter production of menhaden meal, the dominant meal in exports, was seasonally low.

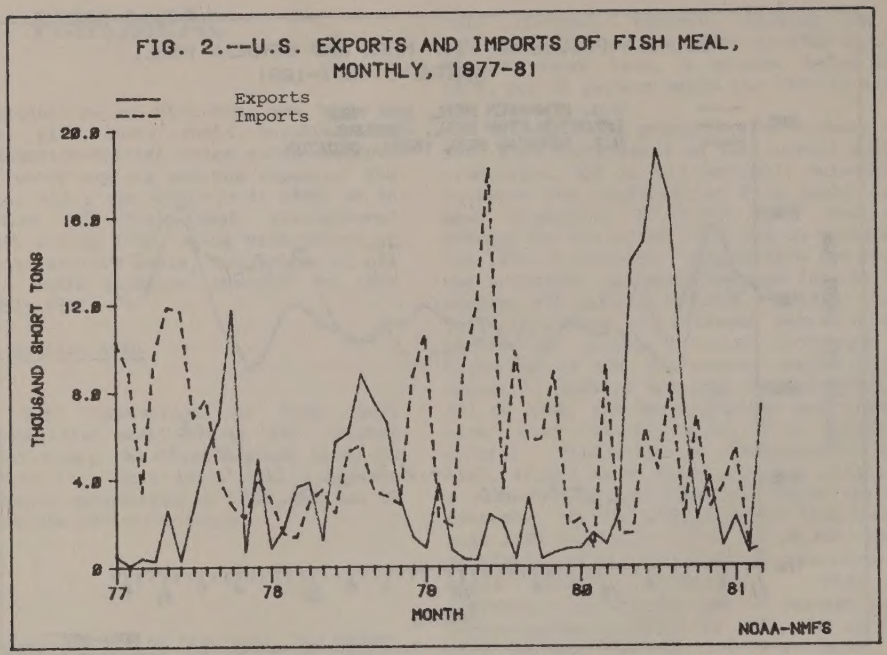


Table 2.--Supply and use of fish meal (excluding shellfish meal), January-March, 1975-79 average, 1980 and 1981

Component	1975-79 average	1980	1981
	Thousand short tons		
Production			
Menhaden (1)	1.4	3.0	0.8
Anchovy	2.7	(2)	2.0
Tuna-mackerel	9.7	9.5	11.2
Unclassified	3.6	5.0	3.8
Total	17.4	17.5	17.8
Imports	12.4	12.2	7.0
New supplies	29.8	29.7	24.8
Exports	4.2	3.4	10.2
Net supplies	25.6	26.3	14.6

(1) May include small quantities made from other species.
(2) Included with unclassified.

World Supplies Decline

The world situation for fish meal in 1980 was marked by limited supplies. In the major exporting countries, production of fish meal fell 16 percent below the level of 1979 (table 3). As a result, their exports fell by 19 percent from year-earlier levels, and their inventories dropped over this 2-year period. Only Chile (among the countries whose supplies are shown in table 3), and Denmark increased production and exports. Peru continued its pattern of decline, yielding to Chile the position of primary importance in world fish meal markets. Overall, some estimates show that 1980 world production of fish meal declined 4 percent from 1979 levels, and that fish oil was virtually the same.

Table 3.--Supply and use of fish meal for selected major exporting countries, 1973-77 average, 1979, and 1980

Component	1973-77 average	1979	1980
	Thousand metric tons		
Supply			
Beginning stocks	260	442	323
Production	1,551	1,626	1,365
Total supply	1,811	2,068	1,689
Use			
Export	1,192	1,465	1,184
Domestic use	314	280	278
Total use	1,506	1,745	1,462
Ending stocks	306	323	228

Note: Includes Chile, Iceland, Norway, Peru, and South Africa. Excludes Peruvian cannery meal.
Source: Fishmeal Exporters Organization, Paris.

The decline in Peruvian production in 1980 relates to conditions of the resources, implementation of catch restrictions, and restriction of the use of catch for fish meal and oil in order to promote the production of edible products. Concern focused on the anchovy and sardine resources, the principal species for fish meal and oil. Reduced production necessitated the importation of fish oil.

Prices

Prices of fish meal experienced considerable movement in 1980 and early 1981, largely reflecting significant strengthening and some subsequent weakening in prices of all high-protein meals. Illustrating the market strengthening, prices of menhaden meal surpassed $500 a short ton for a few weeks in late 1980 for the first time since 1977, and averaged $402 in 1980, compared with $377 in 1979 and $361 in 1978. Monthly prices of major high-protein meals, represented in figure 1 by the price of soybean meal, were trending gradually upward from late 1977 to mid-1979, then gradually downward from mid-1979 to April 1980, but moved sharply upward from June to November 1980. Subsequent declines of high-protein meal prices in late 1980 and early 1981 left prices of menhaden meal at $408 per short ton in April 1981, 10 percent above a year earlier.

FISH OIL

In 1980, U.S. production and exports of fish oil reached record levels. Both U.S. and world supplies were high in 1978-80. Prices have trended downward since 1977.

High U.S. Supplies

An improved oil yield of menhaden pushed U.S. total production of fish oil to a record 312 million pounds in 1980, 16 percent above 1979 and 4 percent above the previous record of 299 million pounds set in 1936. Fish oil exports reached a record 284 million pounds, 43 percent above 1979, and 15 percent above the previous record of 248 million pounds set in 1973. While production was seasonally low in the first quarter of 1981, exports were high, based on carryover stocks (fig. 3 and table 5).

Although U.S. production and exports of fish oil increased to record levels, domestic use of fish oil in 1980 fell sharply to 22 million pounds. The drop in domestic use is attributed to weakness in the U.S. economy and consequent reduced output of and reduced use in some of the products for which fish oil is an ingredient (paint or varnish, fatty acids, resins and plastics, lubricants and similar oils, and other inedible products).

Table 4.--Supply and use of fish oil, 1974-78 average, 1979, and 1980

Component	1974-78 average	1979	1980
	Million pounds		
New supply			
Production			
Menhaden	204.4	251.3	291.4
Anchovy	6.2	2.8	1.4
Tuna-mackerel	5.6	5.4	4.1
Unclassified	8.5	8.4	14.7
Total	224.7	267.9	311.6
Imports	na	14.5	21.4
Total supply	na	282.4	333.0
Use			
Exports	176.6	198.5	284.0
Domestic use	35.9	32.3	21.9
Total use	212.5	230.8	305.9

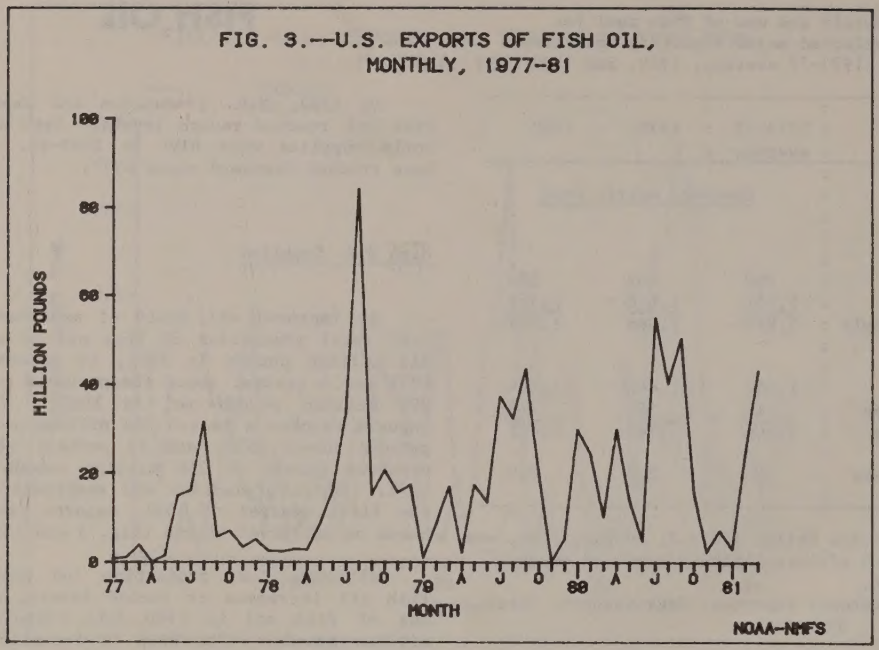


Table 5.--Supply and use of fish oil, January-March, 1975-79 average, 1980, and 1981

Component	1975-79 average	1980	1981
	Thousand pounds		
New supply			
Production			
Menhaden (1)	214	526	208
Anchovy	636	(2)	226
Tuna-mackerel	1,088	711	755
Unclassified	630	946	782
Total	2,567	2,183	1,971
Imports	na	1,726	2,348
Total supply	na	3,909	4,319
Use			
Exports	68,761	64,612	70,741
Domestic use	7,998	6,930	4,754
Total	76,759	71,542	75,495

(1) May include small quantities made from other species.
(2) Included with unclassified.

World Supplies Depress Prices

Estimated world production of fish oil was 1.15 million metric tons in 1980, virtually the same as in 1978-79 and 12 percent above 1977 (Oil World Weekly, excluding marine mammal oils). Estimated world exports, however, have increased an average of 12 percent annually since 1977. This and increased supplies of competing oils and fats help explain the downward trend in annual average prices of U.S. menhaden oil from 21.1 cents per pound in 1977 to 18.8 cents in 1980. Prices of fish oil and soybean oil have tended to move together historically, and the two oils compete as ingredients of edible products in Europe, where most U.S. fish oil is consumed. Strong movements in the price of soybean oil in 1980 and 1981 influenced prices of fish oil. Monthly prices of fish oil drifted downward during most of 1980, recovering in late 1980, but falling in early 1981 (fig. 4). The price of menhaden oil was 18.75 cents per pound in April 1981, the same as a year earlier.

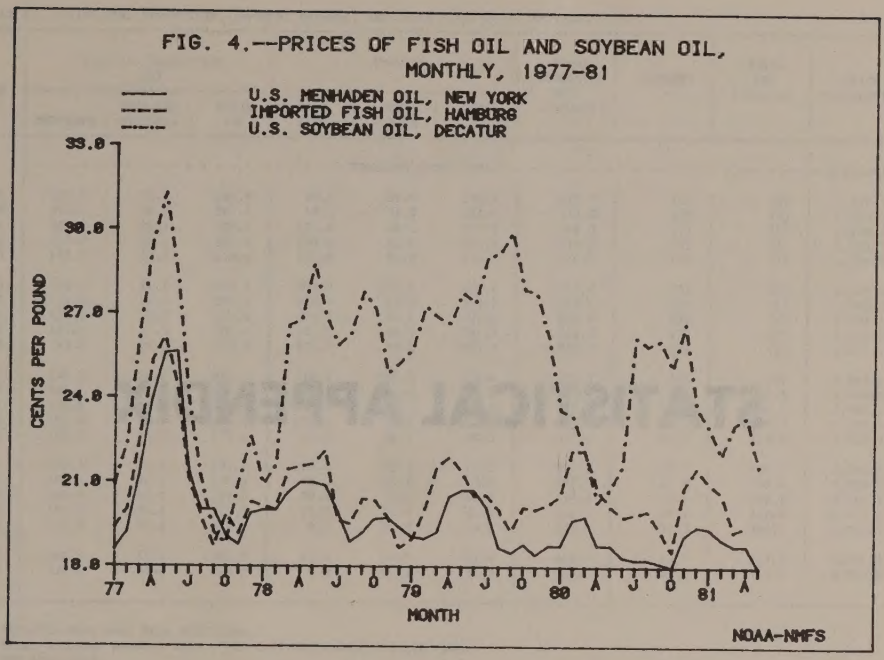


FIG. 4.--PRICES OF FISH OIL AND SOYBEAN OIL, MONTHLY, 1977-81
U.S. MENHADEN OIL, NEW YORK
IMPORTED FISH OIL, HAMBURG
U.S. SOYBEAN OIL, DECATUR
CENTS PER POUND
33.0
30.0
27.0
24.0
21.0
18.0
77 A J O 78 A J O 79 A J O 80 A J O 81 A
MONTH
NOAA-NMFS

STATISTICAL APPENDIX

TABLE A 1.--FISH MEAL PRODUCTION, IMPORTS, EXPORTS, AND CHICK PLACEMENTS, 1959-80

YEAR	FISH MEAL PRODUCTION (1)			IMPORTS			TOTAL PRODUCTION PLUS IMPORTS	EXPORTS	TOTAL NET SUPPLIES	CHICK PLACEMENTS
	MENHADEN	TUNA AND MACKEREL	TOTAL (2)	FROM PERU	FROM CANADA	TOTAL (2)				
	THOUSAND SHORT TONS									MILLIONS
1959	223.9	25.4	296.8	49.9	39.0	132.9	429.7	(3)	(3)	1,632.7
1960	218.4	26.5	281.4	68.2	31.0	131.6	413.0	(3)	(3)	1.738.3
1961	247.6	21.2	300.5	151.4	38.2	217.8	518.3	(3)	(3)	1,916.5
1962	239.7	26.6	301.0	186.2	42.8	252.3	553.3	(3)	(3)	1,993.9
1963	182.4	27.0	248.0	285.4	51.0	376.3	624.3	(3)	(3)	2,054.4
1964	160.4	21.1	225.1	348.0	54.8	439.1	664.2	(3)	(3)	2,149.6
1965	176.0	25.4	242.3	209.8	43.8	270.7	513.0	(3)	(3)	2,368.8
1966	135.0	25.3	212.4	276.6	43.6	447.8	660.2	(3)	(3)	2,594.4
1967	119.1	25.5	201.4	442.5	46.6	651.5	852.9	(3)	(3)	2,594.8
1968	143.2	28.8	227.0	635.9	65.1	855.3	1,082.3	(3)	(3)	2,621.7
1969	159.5	26.9	244.1	218.1	67.8	358.4	602.5	(3)	(3)	2.847.1
1970	188.6	26.7	257.0	153.2	75.4	251.5	508.5	4.7	503.8	3,000.9
1971	221.0	29.3	282.9	199.6	57.6	283.2	566.1	10.1	556.0	2,982.2
1972	193.6	43.2	274.1	352.2	27.6	392.0	666.1	10.4	655.7	3,105.2
1973	188.8	43.6	279.1	41.8	24.6	68.5	347.6	36.7	310.9	3,038.3
1974	203.9	48.2	291.7	29.4	30.3	68.3	359.9	55.5	304.4	2,942.8
1975	191.4	37.2	279.2	75.5	34.0	118.4	397.5	11.8	385.8	3,009.0
1976	212.6	40.1	299.0	79.4	34.0	140.4	439.4	33.1	406.2	3,325.8
1977	193.3	39.2	273.0	15.6	24.8	81.5	354.5	36.1	318.4	3,475.4
1978	276.5	50.6	353.7	6.6	32.7	43.9	397.6	50.7	346.9	3,702.7
1979	280.8	47.4	363.3	28.2	27.2	89.6	452.9	15.7	437.2	4,004.8
1980	271.6	47.0	363.3	6.6	24.2	49.5	404.8	85.3	319.5	4,075.0

(1) EXCLUDES MEAL MADE FROM SHELLFISH.
(2) TOTAL INCLUDES AMOUNTS FROM OTHER CATEGORIES NOT DETAILED HERE.
(3) NOT AVAILABLE.

NOTE: FIGURES MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING; 1980 FIGURES SUBJECT TO REVISION.

TABLE A 2.--SUPPLIES OF FISH MEAL IN THE UNITED STATES, BY MONTH, 1975-79 AVERAGE, AND 1980-81

	PRODUCTION			IMPORTS			TOTAL NEW SUPPLIES			EXPORTS			TOTAL		
	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981
	THOUSAND SHORT TONS														
JANUARY	6.3	6.9	7.4	6.0	2.2	5.4	12.3	9.1	12.9	1.1	0.8	2.3	11.1	8.2	10.6
FEBRUARY	4.8	5.3	5.4	3.2	0.8	0.7	7.9	6.0	6.1	1.9	1.5	0.6	6.1	4.5	5.5
MARCH	6.3	3.8	5.2	3.2	9.2	0.9	9.5	13.1	6.1	1.2	1.0	7.3	8.3	12.1	-1.3
1ST QTR	17.4	16.0	18.0	12.4	12.2	7.0	29.8	28.2	25.1	4.2	3.4	10.2	25.6	24.8	14.8
APRIL	15.7	14.3		9.0	1.4		24.7	15.8		1.5	2.6		23.2	13.2	
MAY	32.8	41.5		10.3	1.5		43.1	43.0		1.0	13.9		42.1	29.1	
JUNE	53.0	58.6		10.1	6.3		63.1	64.9		2.0	14.8		61.2	50.1	
2ND QTR	101.6	114.4		29.4	9.2		131.0	123.6		4.5	31.3		126.5	92.4	
JULY	55.1	59.3		10.7	4.4		65.8	63.7		2.5	19.0		63.3	44.7	
AUGUST	51.4	57.7		10.0	8.3		61.4	66.0		3.4	16.8		58.0	49.2	
SEPTEMBER	38.6	48.8		10.7	2.1		49.3	50.9		4.8	7.6		44.4	43.4	
3RD QTR	145.0	165.8		31.4	14.8		176.4	180.7		10.7	43.4		165.7	137.2	
OCTOBER	25.2	28.5		8.2	6.9		33.4	35.3		5.5	2.1		28.0	33.2	
NOVEMBER	12.1	9.6		9.5	2.7		21.6	12.3		1.7	4.1		19.8	8.2	
DECEMBER	12.3	13.2		4.4	3.6		16.7	16.8		2.9	0.9		13.8	15.9	
4TH QTR	49.6	51.3		22.1	13.2		71.7	64.5		10.1	7.2		61.6	57.3	
TOTAL	313.6	347.5		95.2	49.5		408.8	397.0		29.5	85.3		379.4	311.7	

NOTE: PRODUCTION EXCLUDES MEAL FROM SHELLFISH. 1981 FIGURES ARE PRELIMINARY.
FIGURES MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING.

SOURCE: NMFS, RESOURCE STATISTICS DIVISION; BUREAU OF THE CENSUS.

TABLE A 3.--U.S. PRODUCTION OF FISH MEAL BY SPECIES, BY MONTH, 1975-79 AVERAGE, AND 1980-81

MONTH	ANCHOVY			MENHADEN			TUNA AND MACKEREL			UNCLASSIFIED			TOTAL		
	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981
	THOUSAND SHORT TONS														
JANUARY	1.4	0.0	2.0	1.4	3.0	0.8	2.7	3.2	3.6	0.8	0.7	1.0	6.3	6.9	7.4
FEBRUARY	0.6	0.0	(1)	0.0	0.0	0.0	3.0	3.8	4.0	1.2	1.4	1.4	4.8	5.3	5.4
MARCH	0.8	0.0	0.0	0.0	0.0	0.0	4.0	1.9	3.6	1.6	1.9	1.6	6.3	3.8	5.2
1ST QTR	2.7	0.0	2.0	1.4	3.0	0.8	9.7	9.0	11.2	3.6	4.0	4.0	17.4	16.0	18.0
APRIL	2.7	1.5		7.8	7.1		3.6	3.6		1.7	2.1		15.7	14.3	
MAY	1.7	1.3		25.3	33.4		3.4	3.2		2.4	3.5		32.8	41.5	
JUNE	0.2	1.5		46.9	50.7		3.3	3.4		2.6	3.0		53.0	58.6	
2ND QTR	4.5	4.3		80.0	91.2		10.3	10.3		6.7	8.5		101.6	114.4	
JULY	0.0	0.0		48.6	52.0		3.8	3.8		2.7	3.6		55.1	59.3	
AUGUST	0.0	(1)		44.0	49.8		3.9	4.2		3.4	3.7		51.4	57.7	
SEPTEMBER	0.7	(1)		83.1	39.9		3.7	4.9		2.8	4.0		38.6	48.8	
3RD QTR	0.7	0.0		175.7	141.7		11.4	12.9		8.9	11.2		145.0	165.8	
OCTOBER	2.8	(1)		16.6	21.3		3.7	4.6		2.1	2.6		25.2	28.5	
NOVEMBER	2.8	(1)		4.1	5.0		3.9	3.3		1.3	1.2		12.1	9.6	
DECEMBER	2.6	2.4		4.8	6.8		3.9	3.4		1.0	0.6		12.3	13.2	
4TH QTR	8.2	2.4		25.5	33.1		11.5	11.3		4.5	4.5		49.6	51.3	
TOTAL	16.1	6.7	2.0	282.6	268.9	0.8	42.9	43.5	11.2	23.7	28.2	4.0	313.6	347.5	18.0

(1) INCLUDED WITH UNCLASSIFIED.
(2) INCLUDED WITH JANUARY.
(3) INCLUDED WITH OCTOBER.

NOTE: PRODUCTION EXCLUDES MEAL FROM SHELLFISH.
FIGURES MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING. 1980 FIGURES ARE PRELIMINARY.

SOURCE: NMFS, RESOURCE STATISTICS DIVISION.

TABLE A 4.--U.S. IMPORTS OF FISH MEAL BY COUNTRY OF ORIGIN, BY MONTH, 1975-79 AVERAGE, AND 1980-81

MONTH	CANADA			NORWAY			PERU			OTHER COUNTRIES (2)			TOTAL		
	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981
	THOUSAND SHORT TONS														
JANUARY	1.4	0.7	1.0	0.8	0.0	0.0	2.3	0.0	0.0	1.6	1.5	4.4	6.0	2.2	5.4
FEBRUARY	1.2	0.8	0.7	0.4	(1)	0.0	1.5	0.0	0.0	(1)	0.0	0.0	3.2	0.8	0.7
MARCH	1.8	1.3	0.9	0.7	0.0	0.0	0.0	6.6	0.0	0.7	1.3	0.0	3.2	9.2	0.9
1ST QTR	4.5	2.9	2.6	1.8	(1)	0.0	3.8	6.6	0.0	2.2	2.7	4.4	12.4	12.2	7.0
APRIL	2.7	1.4		1.6	(1)		3.1	0.0		1.5	0.0		9.0	1.4	
MAY	2.5	1.3		1.7	0.0		4.5	0.0		1.6	0.2		10.3	1.5	
JUNE	2.3	2.4		3.3	(1)		3.2	0.0		1.3	3.9		10.1	6.3	
2ND QTR	7.6	5.1		6.6	(1)		10.8	0.0		4.4	4.1		29.4	9.2	
JULY	3.7	3.1		0.7	0.0		5.3	0.0		1.0	1.3		10.7	4.4	
AUGUST	3.9	4.5		0.4	0.0		3.4	0.0		2.2	3.8		10.0	8.3	
SEPTEMBER	3.6	2.1		0.0	0.0		5.8	0.0		1.3	0.0		10.7	2.1	
3RD QTR	11.2	9.8		1.2	0.0		14.6	0.0		4.5	5.1		31.4	14.8	
OCTOBER	3.3	2.8		0.0	0.0		3.8	0.0		1.1	4.1		8.2	6.9	
NOVEMBER	2.2	2.7		0.0	0.0		6.8	0.0		0.5	0.0		9.5	2.7	
DECEMBER	1.8	0.9		0.7	0.0		1.3	0.0		0.6	2.7		4.4	3.6	
4TH QTR	7.3	6.5		0.7	0.0		11.9	0.0		2.2	6.8		22.1	13.2	
TOTAL	30.6	24.2		10.3	(1)		41.1	6.6		13.3	18.7		95.2	49.5	

(1) LESS THAN 50 SHORT TONS.
(2) PRINCIPALLY IN PANAMA IN 1977-80.

NOTE: FIGURES MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING.

SOURCE: BUREAU OF THE CENSUS.

Table A 5.--U.S. fish meal exports, annual, by country of destination, 1973-80

Country of destination	1973	1974	1975	1976	1977	1978	1979	1980
	Short tons							
Canada	2,685	2,163	3,050	1,817	2,076	525	904	1,011
Domincan Republic	396	690	1,309	412	-	1,160	1,007	1,656
Guatemala	160	-	-	-	-	-	-	-
Mexico	1,264	8,533	-	-	1,064	351	682	1,154
Belgium	865	-	-	-	-	-	5	700
Germany, West	21,886	33,006	3,066	17,217	22,832	29,803	951	49,002
Italy	-	275	-	-	-	113	-	8,272
Netherlands	189	-	-	-	-	-	-	-
Spain	488	466	-	-	-	-	-	-
United Kingdom	1,689	542	-	-	-	50	-	-
Yugoslavia	-	275	-	-	-	-	-	-
Iran	4,297	1,905	-	292	220	2,122	-	-
Lebanon	-	-	-	-	210	-	-	763
Saudi Arabia	-	-	-	-	154	1,297	512	228
Syria	-	-	-	661	-	-	-	-
Taiwan	-	-	-	-	1,781	94	259	4,046
Egypt	928	6,063	3,274	11,530	6,120	13,903	9,720	9,878
Ghana	1,542	506	847	782	711	600	-	-
Libya	-	866	-	-	-	-	-	-
Zaire	181	-	-	-	-	-	-	-
Australia	17	-	-	-	-	279	154	-
Other countries (1)	145	225	237	430	935	403	1,507	8,571
Total	36,732	55,515	11,783	33,141	36,103	50,700	15,701	85,281

(1) Exports to the Philippines were 0 in 1978, 784 short tons in 1979, and 6,091 short tons in 1980.

TABLE A 6.--BROILER CHICKS PLACED IN 21 STATES. AND AVERAGE BROILER PRICE AT THE FARM, BY MONTH, 1975-79 AVERAGE, AND 1979-81

TIME PERIOD	CHICKS PLACED				PERCENTAGE CHANGE IN CHICKS PLACED			BROILER PRICE AT THE FARM		
	1975-79 AVERAGE	1979	1980	1981	IN 1979 FROM 1975-79 AVG.	IN 1980 FROM 1979	IN 1981 FROM 1980	1979	1980	1981
	MILLION				PERCENT			CENTS/LB		
JANUARY	283.9	327.5	345.8	352.5	15.4	5.6	1.9	27.4	27.1	30.2
FEBRUARY	264.6	300.3	332.4	327.4	13.5	10.7	-1.5	29.4	25.1	30.4
MARCH	307.0	352.7	366.2	292.5	14.9	3.8	-20.1	28.7	24.0	29.7
1ST QTR	855.5	980.4	1044.3	972.4	14.6	6.5	-6.9	28.5	25.4	30.1
APRIL	307.0	355.3	353.1	366.9	15.7	-0.6	3.9	28.0	22.6	26.8
MAY	319.6	370.2	361.4		15.8	-2.4		29.5	24.1	28.2
JUNE	310.5	362.1	350.8		16.6	-3.1		27.2	25.1	
2ND QTR	937.2	1087.7	1065.3		16.1	-2.1		28.2	23.9	
JULY	303.6	349.7	345.1		15.2	-1.3		24.7	32.0	
AUGUST	293.9	344.6	318.6		17.2	-7.5		23.0	32.1	
SEPTEMBER	271.0	307.0	315.6		13.3	2.8		23.0	32.0	
3RD QTR	868.5	1001.3	979.3		15.3	-2.2		23.6	32.0	
OCTOBER	275.2	307.6	328.6		11.8	6.8		21.2	31.4	
NOVEMBER	271.9	293.9	314.9		8.1	7.1		24.9	30.2	
DECEMBER	295.3	333.8	342.5		13.1	2.6		25.2	29.7	
4TH QTR	842.3	935.4	986.0		11.0	5.4		23.8	31.3	
TOTAL	3503.4	4004.8	4075.0		14.3	1.8		26.0	28.2	

NOTE: FIGURES MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING. 1979 AND 1980 FIGURES ARE PRELIMINARY.

SOURCES: DELMARVA BROILER CHICK REPORT, U.S. DEPARTMENT OF AGRICULTURE, STATISTICAL REPORTING SERVICE;
POULTRY AND EGG SITUATION, U.S. DEPARTMENT OF AGRICULTURE, ECONOMICS, STATISTICS, AND COOPERATIVES SERVICE.

TABLE A 7.--SUPPLY AND UTILIZATION OF FISH MEAL IN MAJOR EXPORTING COUNTRIES, JANUARY-DECEMBER 1977 AND 1978

COUNTRY AND PERIOD	BEGINNING INVENTORY	PRODUCTION	SUBTOTAL	EXPORTS	DOMESTIC CONSUMPTION	ENDING INVENTORY
	METRIC TONS					
1977						
FEO COUNTRIES (1)						
CHILE	36,352	220,628	256,980	198,630	13,048	45,790
ICELAND	3,665	169,558	173,223	149,204	4,800	19,118
NORWAY	139,358	464,799	604,157	450,310	25,438	128,409
PERU	148,033	452,377	600,410	394,697	113,593	89,679
SOUTH AFRICA	1,908	171,400	173,308	9,165	156,870	7,273
FEO TOTAL	329,316	1,478,762	1,808,078	1,202,006	313,749	290,269
OTHER COUNTRIES						
CANADA	3,589	44,531	48,120	27,626	16,531	4,427
DENMARK	7,000	300,000	307,000	263,800	(2)	(2)
GRAND TOTAL	339,905	1,823,293	2,163,198	1,493,432	(2)	(2)
1978						
FEO COUNTRIES (1)						
CHILE	45,790	327,552	373,342	289,741	11,714	72,975
ICELAND	19,118	200,360	219,478	204,005	4,800	10,673
NORWAY	128,409	330,479	458,888	293,840	30,521	134,527
PERU	89,679	573,893	663,572	420,171	70,012	173,389
SOUTH AFRICA	7,273	182,000	189,273	5,000	147,881	36,392
FEO TOTAL	290,269	1,614,284	1,904,553	1,212.757	264,928	427,956
OTHER COUNTRIES						
CANADA	4,427	57,832	62,259	35,565	23,556	3,480
DENMARK	(2)	320,000	(2)	246,600	(2)	(2)
GRAND TOTAL	(2)	1,992,116	(2)	1,494,922	(2)	(2)

(1) EXCLUDING ANGOLA, FOR WHICH COUNTRY FIGURES ARE NOT AVAILABLE.
(2) NOT AVAILABLE.

SOURCE: FISHMEAL EXPORTERS ORGANIZATION (FEO), PARIS; OIL WORLD WEEKLY, PUBLISHED BY ISTA MIELKE & CO., HAMBURG; CANADA, FISHERIES AND OCEANS, OTTAWA AND OTHER SOURCES.

NOTE: FIGURES ARE PRELIMINARY, AND MAY INCLUDE SLIGHT DISCREPANCIES, OWING TO REVISIONS, TO DIFFERENCES IN DEFINITION OR REPORTING PRACTICES AMONG SOURCES AND COUNTRIES, AND TO OTHER POSSIBLE REASONS. FIGURES FOR DENMARK ARE PARTIALLY ESTIMATED.

Table A. 8--Supply and use of fish meal in major exporting countries, January-December 1979 and 1980

Country and period	Beginning inventory	Production	Subtotal	Exports	Domestic counsumption	Ending inventory
			Metric tons			
1979						
FEO countries (1)						
Chile	72,975	441,449	514,424	388,471	8,032	113,837
Iceland	10,673	204,062	214,735	196,018	4,800	13,389
Norway	133,535	325,257	458,792	329,394	37,331	92,067
Peru	173,389	485,140	658,529	525,316	72,775	73,300
South Africa	36,392	170,120	206,512	26,012	149,726	30,774
FEO total	336,374	1,626,028	1,962,402	1,465,211	272,664	323,367
Other countries						
Canada	3,480	51,819	55,299	26,139	26,211	3,257
Denmark	21,000	291,200	312,200	266,600	38,600	7,000
Grand total	360,854	1,969,047	2,329,901	1,757,950	337,475	333,624
1980						
FEO countries (1)						
Chile	113,837	486,563	600,400	502,349	13,213	86,073
Iceland	13,389	169,170	182,559	156,713	10,842	15,004
Norway	92,067	292,490	384,557	269,333	47,412	67,812
Peru	73,300	270,025	343,325	241,097	57,866	44,587
South Africa	30,774	147,258	178,032	14,452	148,888	14,691
FEO total	323,367	1,365,506	1,688,873	1,183,944	278,221	228,167
Other countries						
Canada	3,257	47,766	51,023	30,369	18,636	2,341
Denmark	7,000	388,500	392,500	297,900	(2)	(2)
Grand total	333,624	1,801,772	17,332,396	1,512,213	(2)	(2)

(1) Excluding Angola, for which country figures are not available.
(2) Not available.

Source: Fishmeal Exporters Organization (FEO), Paris; Oil World Weekly, Published by ISTA Mielke & Co., Hamburg; Canada, Fisheries and Oceans, Ottawa; and other sources.

Note: Figures are preliminary, and may include slight discrepancies, owing to revisions, to differences in definition or reporting practices among sources and countries, and to other possible reasons. Figures for Denmark are partially estimated. Excludes Peruvian cannery meal.

TABLE A 9.--FEO EXPORTS OF FISH MEAL BY COUNTRY OF DESTINATION, JANUARY-DECEMBER 1977-78

COUNTRY OF DESTINATION	EXPORTS		PERCENTAGE OF TOTAL FEO EXPORTS		PERCENTAGE CHANGE FROM 1977 TO 1978
	1977	1978	1977	1978	
	- THOUSAND METRIC TONS -		- - - - - - - - - - - PERCENT - - - - - - - - - - -		
FRANCE	51.2	40.4	4.3	3.3	- 21.1
GERMANY, FED. REP.	180.5	216.9	15.0	17.9	+ 20.2
HOLLAND/BELGIUM	44.0	41.9	3.7	3.5	- 4.8
ITALY	41.8	40.5	3.5	3.3	- 3.1
PORTUGAL	9.6	10.3	0.8	0.8	+ 7.3
SWITZERLAND	10.2	8.5	0.8	0.7	- 16.7
UNITED KINGDOM	86.3	98.3	7.2	8.1	+ 13.9
SCANDINAVIAN COUNTRIES	100.4	121.4	8.4	10.0	+ 20.9
EAST EUROPEAN COUNTRIES	324.8	367.9	27.0	30.3	+ 13.3
U.S.S.R.	14.2	-	1.2	-	- 100.0
UNITED STATES	32.6	14.1	2.7	1.2	- 56.8
CUBA	21.4	33.5	1.8	2.8	+ 56.5
OTHER LATIN AMERICAN COUNTRIES	16.4	27.4	1.4	2.3	+ 67.1
CHINA, P.R.	5.0	14.6	0.4	1.2	+ 192.0
IRAN	30.7	58.4	2.6	4.8	+ 90.2
ISRAEL	20.4	13.7	1.7	1.1	- 32.9
JAPAN	146.7	31.2	12.2	2.6	- 78.7
TAIWAN	24.7	37.1	2.1	3.1	+ 50.2
OTHER COUNTRIES	41.18	36.65	3.4	3.0	- 11.0
TOTAL	1,202.08	1,212.75	100.0	100.0	+ 0.9

NOTE: RECIPIENT COUNTRIES AND CATEGORIES ARE THOSE GIVEN BY FEO.
SOURCE: FISHMEAL EXPORTERS ORGANIZATION (FEO).

Table A10.--FEO exports of fish meal by country of destination, January-December 1979-80

Country of destination	Exports		Percentage of total FEO exports		Percentage change from 1979 to 1980
	1979	1980	1979	1980	
	Thousand metric tons		Percent		
France	40.3	36.0	2.5	2.6	- 10.7
Germany, Fed. Rep.	393.9	389.3	24.7	28.7	- 1.2
Holland/Belgium	35.9	23.5	2.2	1.7	- 34.5
Italy	69.5	42.2	4.4	3.1	- 39.3
Portugal	9.1	1.5	0.6	0.1	- 83.5
Switzerland	11.8	10.4	0.7	0.8	- 11.9
United Kingdom	125.5	61.6	7.9	4.5	- 51.0
Scandinavian countries	160.3	156.5	10.0	11.5	- 2.4
East Europe countries	383.4	281.0	24.0	20.7	- 26.7
United States	40.7	10.0	2.5	0.7	- 75.4
Cuba	36.5	65.5	2.5	4.8	+ 79.5
Other Latin Am. countries	36.1	17.9	2.3	1.3	- 50.4
China, P.R.	23.1	18.4	1.4	1.4	- 20.3
Iran	45.2	69.3	2.8	5.1	+ 53.3
Israel	11.9	8.4	0.7	0.6	- 29.4
Japan	72.2	79.3	4.5	5.8	+ 9.8
Taiwan	41.2	33.2	2.6	2.4	- 19.4
South Korea	14.2	-	0.9	-	- 100.0
Other countries	46.3	53.3	2.9	3.9	+ 15.1
Total	1,597.1	1,358.3	100.0	100.0	- 15.0

Note: Recipient countries and categories are those given by FEO. Includes Peruvian cannery meal.
Source: Fishmeal Exporters Organization (FEO).

TABLE A11.--SELECTED AVERAGE MONTHLY WHOLESALE PRICES AND PRICE RATIO OF FISH MEAL TO SOYBEAN MEAL, 1979-81

MONTH	MENHADEN (1)	TUNA-MIX (2)	IMPORTED PERUVIAN (3)	NORTHWEST EUROPE (4)	JAPAN (5)	SOYBEAN (6)		MENHADEN MEAL TO 50% PROTEIN SOYBEAN MEAL
						44% PROTEIN	50% PROTEIN	
	DOLLARS PER SHORT TON							PRICE RATIO
1979								
JANUARY	377.00	346.04	390.50	345.19	385.71	184.90	200.60	1.88
FEBRUARY	380.00	288.75	390.00	346.09	380.60	190.75	206.63	1.84
MARCH	391.25	347.19	398.00	345.28	392.40	194.50	210.50	1.86
APRIL	401.00	343.75	410.00	331.58	461.12	191.13	207.13	1.94
MAY	380.00	343.75	388.33	333.67	470.68	188.00	205.00	1.85
JUNE	379.38	343.75	392.50	356.53	401.17	209.63	227.63	1.67
JULY	381.00	357.50	400.83	376.03	397.57	201.60	220.90	1.72
AUGUST	359.38	320.72	391.88	362.51	396.14	188.88	205.25	1.75
SEPTEMBER	357.50	316.25	387.50	357.21	403.74	188.63	204.88	1.74
OCTOBER	366.50	316.25	380.00	357.21	416.10	181.40	197.80	1.85
NOVEMBER	370.63	316.25	390.00	376.30	404.88	183.15	197.38	1.88
DECEMBER	376.67	334.58	405.83	408.54	412.90	188.00	205.25	1.84
AVERAGE	376.69	331.23	393.78	358.01	410.25	190.88	207.41	1.82
1980								
JANUARY	392.50	345.47	410.00	445.43	413.04	180.20	194.80	2.01
FEBRUARY	402.50	343.75	-	470.15	425.96	174.25	189.25	2.13
MARCH	399.00	343.75	-	433.87	447.84	164.63	180.38	2.21
APRIL	368.13	323.13	-	426.20	509.43	154.20	168.00	2.19
MAY	338.75	288.75	-	458.13	504.28	166.50	180.75	1.87
JUNE	325.00	288.75	-	439.08	520.41	160.88	175.13	1.86
JULY	358.75	308.35	-	434.73	501.66	187.90	202.10	1.78
AUGUST	371.25	314.19	-	444.30	510.79	207.38	222.13	1.67
SEPTEMBER	408.00	324.78	-	454.50	514.21	234.50	251.70	1.62
OCTOBER	452.50	346.50	-	464.30	-	246.38	262.63	1.72
NOVEMBER	496.88	385.00	-	515.29	497.05	261.38	277.13	1.79
DECEMBER	498.00	385.00	-	505.08	512.37	223.70	239.10	2.08
AVERAGE	400.94	333.12	410.00	457.59	487.00	196.82	211.92	1.89
1981								
JANUARY	466.25	385.00	-	490.79	567.82	222.50	238.90	1.95
FEBRUARY	419.38	357.50	-	470.15	531.16	212.50	229.00	1.83
MARCH	401.25	357.50	-	459.94		210.40	226.00	1.78
APRIL	408.12	357.50	-	452.92		222.00	238.38	1.71
MAY	420.63	354.41		457.91		221.00	238.00	1.77
JUNE								
JULY								
AUGUST								
SEPTEMBER								
OCTOBER								
NOVEMBER								
DECEMBER								
AVERAGE								

(1) 60 PERCENT PROTEIN, BULK, QUOTED BY BROKERS AT NEW YORK CITY, F.O.B., EAST COAST AND GULF PLANTS.
(2) 55 PERCENT PROTEIN, BULK, LOS ANGELES.
(3) 65 PERCENT PROTEIN, BULK, F.O.B., EAST COAST AND GULF PORTS.
(4) 64-65 PERCENT PROTEIN, ANY ORIGIN, C & F, HAMBURG, FEDERAL REPUBLIC OF GERMANY.
(5) THE AVERAGE UNIT VALUE OF IMPORTS INTO JAPAN OF FISH MEAL AND FLOUR, C.I.F., EXCLUDING ANY DUTIES ON IMPORTS IN EXCESS OF QUOTAS, CONVERTED AT THE AVERAGE MONTHLY CURRENCY EXCHANGE RATE.
(6) BULK, DECATUR, ILL.

SOURCE: FOR PRICES OF FISH MEAL IN THE UNITED STATES: NMFS, RESOURCE STATISTICS DIVISION.
FOR NORTHWEST EUROPE PRICES: OIL WORLD, ISTA MIELKE & CO., HAMBURG, FEDERAL REPUBLIC OF GERMANY.
FOR SOYBEAN MEAL PRICES: FEED MARKET NEWS, U.S. DEPARTMENT OF AGRICULTURE, CONSUMER AND MARKETING SERVICE, GRAIN DIVISION.
FOR JAPANESE PRICES: JAPAN TARIFF ASSOCIATION, JAPAN EXPORTS AND IMPORTS; IMF, INTERNATIONAL FINANCIAL STATISTICS.

TABLE A12.--U.S. SUPPLIES OF FISH SOLUBLES, 1953-80

YEAR	PRODUCTION			IMPORTS	TOTAL SUPPLIES
	MENHADEN	OTHER	TOTAL		
	THOUSAND SHORT TONS				
1953	39.5	42.5	81.5	-	81.5
1954	56.3	58.8	115.0	3.6	118.6
1955	61.9	49.0	110.9	3.3	114.2
1956	72.9	56.0	128.8	3.0	131.8
1957	69.4	52.9	122.3	9.7	132.0
1958	72.5	57.7	130.2	14.6	144.8
1959	108.1	57.3	165.4	26.6	192.0
1960	65.8	33.1	98.9	3.2	102.1
1961	73.3	38.9	112.2	6.7	119.0
1962	85.2	39.4	124.6	6.3	130.9
1963	74.8	32.6	107.4	7.1	114.5
1964	68.7	24.6	93.3	4.5	97.8
1965	73.2	21.7	94.8	5.1	100.0
1966	60.8	22.7	83.4	4.3	87.7
1967	51.8	22.9	74.7	3.7	78.3
1968	53.2	18.6	71.8	1.8	73.6
1969	63.3	18.4	81.7	0.2	81.8
1970	71.9	23.1	95.0	0.5	95.4
1971	91.5	19.7	111.2	0.1	111.2
1972	104.1	30.3	134.4	0.1	134.5
1973	104.4	33.1	137.4	0.3	137.7
1974	102.9	34.3	137.3	-	137.3
1975	83.6	44.2	127.8	0.1	127.9
1976	95.3	37.8	133.1	1.2	134.3
1977	87.4	34.9	122.3	0.8	123.2
1978	132.0	30.5	162.5	(1)	162.5
1979	104.9	30.0	134.9	(1)	134.9
1980	99.4	34.3	133.7	(1)	133.7

(1) IMPORTS NOT REPORTED SEPARATELY BEGINNING IN 1978.

NOTE: FIGURES MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING; 1980 FIGURES SUBJECT TO REVISION.

TABLE A13.--PRODUCTION AND AVERAGE PRICE OF FISH SOLUBLES, BY MONTH, 1975-79 AVERAGE AND 1980-81

MONTH	PRODUCTION				PRICE (1)			MENHADEN SOLUBLES TO MENHADEN MEAL		
	1975-79 AVERAGE	1979	1980	1981	1979	1980	1981	1979	1980	1981
	THOUSAND SHORT TONS				DOLLARS PER SHORT TON			PRICE RATIO		
JANUARY	2.3	1.9	3.1	4.5	121.50	110.00	117.50	0.32	0.28	0.25
FEBRUARY	1.6	1.6	0.9	1.8	122.50	107.50	121.88	1.62	0.27	0.29
MARCH	2.9	2.4	1.2	1.8	123.13	94.50	122.50	0.31	0.24	0.31
1ST QTR	6.8	5.9	5.1	8.1	122.38	104.00	120.63	0.32	0.26	0.28
APRIL	8.1	7.5	5.7		124.00	92.50	129.37	0.31	0.25	0.32
MAY	14.3	17.6	15.9		121.25	92.50	125.00	0.32	0.27	0.30
JUNE	21.2	25.9	18.1		118.75	89.50		0.31	0.28	
2ND QTR	43.7	51.1	39.7		121.33	91.50		0.31	0.27	
JULY	22.6	41.3	20.8		123.00	92.50		0.32	0.26	
AUGUST	22.0	22.7	22.1		125.00	92.50		0.35	0.25	
SEPTEMBER	18.2	12.9	16.8		121.25	96.50		0.34	0.24	
3RD QTR	62.8	76.8	59.7		123.08	93.83		0.34	0.25	
OCTOBER	12.3	12.9	10.9		116.50	97.50		0.32	0.22	
NOVEMBER	6.3	5.1	4.7		111.25	112.50		0.30	0.23	
DECEMBER	4.2	2.6	4.6		106.67	123.50		0.28	0.25	
4TH QTR	22.8	20.6	20.3		111.47	111.17		0.30	0.23	
TOTAL	136.1	154.4	124.9		119.57	100.13		0.32	0.25	

(1) MENHADEN SOLUBLES IN TANK CARS. PRICE QUOTED BY BROKERS AT NEW YORK CITY, F.O.B. EAST COAST PLANTS.
(2) NOMINAL PRICE.

NOTE: FIGURES MAY NOT SUM TO TOTAL BECAUSE OF ROUNDING. 1980 FIGURES SUBJECT TO REVISION.

SOURCE: NMFS, RESOURCE STATISTICS DIVISION.

TABLE A14.--FISH OIL PRODUCTION, IMPORTS, EXPORTS, DOMESTIC USE, AND APPARENT STOCK CHANGES, 1950-80

YEAR	U.S. PRODUCTION (1)					IMPORTS (2)	TOTAL SUPPLIES (3)	EXPORTS (4)	U.S. INDUSTRIAL UTILIZATION (2)	NET CHANGES IN STOCKS
	MENHADEN	TUNA AND MACKEREL	HERRING	OTHER	TOTAL					
	MILLION POUNDS									
1950	76.6	6.6	24.8	52.7	160.7	15.1	175.9	76.0	(5)	(5)
1951	94.0	5.3	11.3	22.9	133.5	17.4	150.9	49.8	(5)	(5)
1952	96.7	5.6	8.1	8.2	118.6	15.6	134.2	44.0	(5)	(5)
1953	133.7	4.9	5.4	6.7	150.7	12.0	162.6	108.5	(5)	(5)
1954	139.8	4.4	5.7	12.3	162.2	13.0	175.2	141.6	(5)	(5)
1955	159.2	4.1	8.2	13.6	185.1	10.4	195.5	142.7	74.9	- 22.1
1956	168.2	5.3	13.7	10.1	197.3	10.7	207.9	140.9	81.3	- 14.2
1957	118.5	5.5	14.1	10.1	148.2	7.2	155.4	114.9	83.0	- 42.5
1958	128.0	4.7	13.2	15.7	161.6	4.9	166.6	94.0	67.5	+ 5.1
1959	154.7	4.5	15.0	9.0	183.2	6.8	189.9	144.5	58.6	- 13.2
1960	183.4	3.8	11.5	6.9	205.6	8.9	214.6	143.7	56.8	+ 14.1
1961	235.2	5.7	6.1	7.6	254.6	8.4	263.0	122.5	64.8	+ 75.7
1962	232.6	5.0	5.1	4.8	247.5	10.8	258.2	123.0	62.9	+ 72.3
1963	167.6	5.9	5.7	4.5	183.7	8.6	192.2	262.3	52.1	-122.2
1964	157.7	4.8	10.3	4.2	177.0	11.8	188.8	151.5	47.7	- 10.4
1965	175.2	4.8	8.5	4.3	192.8	6.0	198.7	103.8	44.5	+ 50.4
1966	144.2	4.1	7.9	6.5	162.7	12.7	175.3	77.3	38.8	+ 59.2
1967	101.4	5.2	5.7	7.6	119.9	7.0	126.9	76.8	35.8	+ 14.3
1968	152.0	4.5	9.5	5.7	171.7	5.9	177.6	65.1	30.0	+ 82.5
1969	149.2	4.2	3.5	11.1	168.0	4.2	172.2	196.1	34.1	- 58.0
1970	186.3	3.5	5.4	10.9	206.1	5.5	211.6	158.8	31.4	+ 21.4
1971	244.0	4.9	5.9	10.2	265.0	7.5	272.5	229.9	26.5	+ 16.1
1972	167.0	5.0	5.1	11.3	188.4	9.4	197.9	193.2	29.8	- 34.5
1973	200.5	7.4	1.7	15.0	224.6	6.7	231.4	247.8	26.5	- 42.9
1974	217.0	5.8	(6)	14.1	238.0	12.4	250.3	199.1	35.0	+ 16.2
1975	213.3	6.4	(6)	25.9	245.7	11.3	256.9	191.8	36.8	+ 28.3
1976	186.4	6.3	(6)	11.8	204.6	20.9	225.5	179.2	38.4	+ 7.8
1977	116.1	3.8	(6)	13.2	133.2	13.7	146.9	90.6	35.4	+ 20.8
1978	284.0	4.4	(6)	7.9	296.3	16.0	312.3	222.0	33.8	+ 56.5
1979	251.3	5.4	(6)	11.2	267.9	14.5	282.4	198.5	32.3	+ 53.4
1980	291.3	4.1	(6)	16.1	311.5	21.4	332.9	284.0	21.9	+ 27.0

(1) EXCLUDES WHALE AND SPERM OILS.
(2) EXCLUDES LIVER, WHALE, AND SPERM OILS.
(3) PRODUCTION PLUS IMPORTS.
(4) DOES NOT INCLUDES EXPORTS OF FOREIGN MERCHANDISE.
(5) NOT AVAILABLE.
(6) INCLUDED WITH OTHER.

NOTE: FIGURES MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING.

TABLE A15.--U.S. PRODUCTION OF FISH OIL BY SPECIES, BY MONTH, 1975-79 AVERAGE, AND 1980-81

MONTH	ANCHOVY			MENHADEN			TUNA AND MACKEREL			UNCLASSIFIED			TOTAL		
	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981	1975-79 AVERAGE	1980	1981
	MILLION POUNDS														
JANUARY	0.5	0.0	0.2	0.2	0.5	0.2	0.3	0.2	0.5	0.2	0.1	0.1	1.2	0.9	1.0
FEBRUARY	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.2	0.2	0.2	0.4	0.6	0.6	0.6
MARCH	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.1	0.3	0.1	0.3	0.8	0.2	0.3
1ST QTR	0.6	0.0	0.2	0.2	0.5	0.2	1.1	0.7	0.8	0.6	0.5	0.7	2.6	1.7	1.9
APRIL	0.2	(1)		7.0	6.8		0.4	0.4		0.3	0.4		7.8	7.6	
MAY	0.3	(1)		25.4	39.5		0.5	0.3		0.7	0.7		26.8	40.5	
JUNE	0.1	(1)		42.9	58.8		0.4	0.3		1.0	2.1		44.3	61.2	
2ND QTR	0.5	(1)		75.2	105.2		1.2	1.0		1.9	3.1		78.9	109.3	
JULY	0.0	0.0		42.5	58.2		0.4	0.4		1.5	3.0		44.5	61.6	
AUGUST	0.0	(1)		42.2	53.0		0.6	0.3		1.5	3.0		44.2	56.3	
SEPTEMBER	0.6	(1)		32.1	42.6		0.5	0.3		1.4	2.0		34.6	44.9	
3RD QTR	0.6	(1)		116.9	153.9		1.5	1.1		4.4	8.0		123.4	162.9	
OCTOBER	1.5	(1)		15.7	25.3		0.6	0.5		1.0	2.0		18.7	27.9	
NOVEMBER	1.3	(1)		1.4	2.4		0.4	0.3		0.3	0.2		3.4	2.9	
DECEMBER	1.1	0.4		0.8	1.5		0.4	0.2		0.2	0.2		2.5	2.4	
4TH QTR	3.9	0.4		17.9	29.2		1.4	1.0		1.5	2.5		24.7	33.1	
TOTAL	5.6	0.4		210.2	288.8		5.3	3.8		8.4	14.1		229.5	307.0	

(1) INCLUDED WITH UNCLASSIFIED.
(2) LESS THAN 50,000 POUNDS.
(3) INCLUDED WITH JANUARY.
(4) INCLUDED WITH SEPTEMBER.

NOTE: FIGURES MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING.
1981 FIGURES SUBJECT TO REVISION.

SOURCE: NMFS, RESOURCE STATISTICS DIVISION.

TABLE A16.--U.S. EXPORTS, DOMESTIC INDUSTRIAL USE, AND TOTAL DISAPPEARANCE OF FISH OIL, BY MONTH, 1975-79 AVERAGE, AND 1979-81

	EXPORTS (1)				DOMESTIC DISAPPEARANCE (2)				TOTAL DISAPPEARANCE			
	1975-79 AVERAGE	1979	1980	1981	1975-79 AVERAGE	1979	1980	1981	1975-79 AVERAGE	1979	1980	1981
	MILLION POUNDS											
JANUARY	5.2	1.0	29.9	2.9	2.8	3.3	2.3	1.5	8.1	4.3	32.2	4.4
FEBRUARY	2.6	8.5	24.5	24.7	2.4	1.9	2.4	1.7	5.0	10.5	26.9	26.4
MARCH	5.4	17.0	10.2	43.1	2.8	2.9	2.3	1.5	8.2	19.9	12.5	44.6
1ST QTR	13.3	26.6	64.6	70.7	8.0	8.0	6.9	4.8	21.3	34.6	71.5	75.5
APRIL	2.0	2.3	29.9		3.0	2.9	1.8		5.0	5.2	31.7	
MAY	6.5	17.5	13.9		3.0	3.0	2.5		9.5	20.5	16.4	
JUNE	18.2	13.5	4.8		3.0	3.2	1.8		21.2	16.7	6.6	
2ND QTR	26.7	33.2	48.6		9.0	9.1	6.1		35.7	42.4	54.7	
JULY	29.9	37.3	55.1		2.9	2.5	1.2		32.8	39.9	56.3	
AUGUST	43.4	32.4	40.2		3.4	3.2	1.8		46.8	35.6	42.0	
SEPTEMBER	22.3	43.6	50.4		3.3	2.2	1.8		25.6	45.8	52.2	
3RD QTR	95.5	113.3	145.7		9.6	7.9	4.8		105.2	121.2	150.5	
OCTOBER	15.7	20.0	15.5		3.0	2.5	1.5		18.7	22.6	17.0	
NOVEMBER	10.5	0.1	2.3		3.2	3.0	1.2		13.7	3.1	3.5	
DECEMBER	13.7	5.3	7.2		2.6	1.6	1.4		15.9	6.9	8.6	
4TH QTR	39.9	25.4	25.0		8.8	7.2	4.1		48.3	32.6	29.1	
TOTAL	175.4	198.5	284.0		35.4	32.3	21.9		210.4	230.8	305.9	

(1) BEGINNING IN JANUARY 1978, MAY INCLUDE EXPORTS OF WHALE SPERM OIL.
(2) INCLUDING MARINE MAMMAL OIL OTHER THAN SPERM OIL AND SOME HYDROGENATED FAT (VEGETABLE AND ANIMAL) AND OTHER FATS AND OILS IN PROCESS.
(3) LESS THAN 50,000 POUNDS.

SOURCE: BUREAU OF THE CENSUS. CURRENT INDUSTRIAL REPORT, FATS AND OILS, PRODUCTION CONSUMPTION AND STOCKS. SERIES: M20K(75-81).

NOTE: FIGURES MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING.

Table A 17.--U.S. fish oil exports, annual, by country of destination, 1972-80

Country of destination	1972	1973	1974	1975	1976	1977	1978	1979	1980
				Thousand pounds					
Canada	2,578	1,181	1,255	1,241	191	312	639	405	539
Mexico	124	195	309	198	269	284	303	471	1,202
Panama	68	-	-	-	-	-	4	3	-
Argentina	-	-	-	-	-	402	41	9	9
Colombia	-	10,667	8,846	-	26,598	5,576	18,302	21,438	4,118
Belgium/Luxemb.	2,250	1,212	-	4,797	11,305	1,102	5,584	17,717	24,411
Denmark	2,425	-	-	-	-	-	-	-	-
France	-	8	-	-	-	1,921	1,987	1,876	1,984
Germany, West	26,250	5,511	11,467	12,080	13,855	13,968	45,042	13,820	36,890
Italy	-	-	-	-	285	-	-	2	13
Netherlands	82,220	146,386	147,067	55,408	82,905	52,554	81,968	75,168	86,051
Norway	9,171	-	11,038	-	1,323	2,200	1,125	494	7
Sweden	61,558	37,980	13,889	41,577	2,212	3,272	8,745	11,745	9,619
United Kingdom	11	41,388	4,122	74,628	34,088	7,938	50,600	45,048	83,678
Japan	49	22	-	-	-	-	251	-	-
Lebanon	1,212	2,583	442	1,342	-	-	2	-	-
South Africa	4,590	-	-	-	5,176	-	-	-	(1)
Australia	535	583	561	-	664	696	7	882	-
Other countries	157	77	125	572	364	408	7,410	9,420	35,183 (2)
Total	193,198	247,793	199,122	191,843	179,235	90,633	222,012	198,497	284,004

(1) Less than 500 pounds.
(2) Includes 27 million pounds exported to Peru in 1980.
Note: Figures may not add to total because of rounding.
Source: Bureau of the Census.

TABLE A18.--SELECTED AVERAGE MONTHLY PRICES OF FISH AND SOYBEAN OILS, AND PRICE RATIO OF MENHADEN OIL TO SOYBEAN OIL, 1979-81

	ANCHOVY (1)	MENHADEN (2)	TUNA (3)	NORTHWEST EUROPE (4)	SOYBEAN (5)	MENHADEN OIL TO SOYBEAN OIL
	CENTS PER POUND					PRICE RATIO
1979						
JANUARY	(6)	19.05	11.00	18.99	25.80	0.74
FEBRUARY	(6)	19.00	11.00	20.01	27.30	0.70
MARCH	(6)	19.25	11.00	21.55	26.90	0.72
APRIL	(6)	20.50	11.40	21.94	26.70	0.77
MAY	(6)	20.75	11.50	21.44	27.80	0.75
JUNE	(6)	20.75	11.44	20.53	27.41	0.76
JULY	(6)	20.15	11.50	20.58	29.07	0.69
AUGUST	(6)	18.69	11.50	20.05	29.21	0.64
SEPTEMBER	(6)	18.50	11.50	19.28	29.97	0.62
OCTOBER	(6)	18.80	11.50	20.13	27.89	0.67
NOVEMBER	(6)	18.44	11.88	20.05	27.79	0.66
DECEMBER	(6)	18.75	11.83	20.22	26.20	0.72
AVERAGE		19.39	11.42	20.40	27.67	0.70
1980						
JANUARY	(6)	18.75	12.00	20.55	23.60	0.79
FEBRUARY	(6)	19.69	12.00	22.23	23.40	0.84
MARCH	(6)	19.80	12.40	22.11	22.10	0.90
APRIL	(6)	18.75	12.13	20.77	20.30	0.92
MAY	(6)	18.75	12.00	20.19	20.80	0.90
JUNE	(6)	18.35	12.00	19.79	21.60	0.85
JULY	(6)	18.25	12.00	19.87	26.20	0.70
AUGUST	(6)	18.25	12.00	20.01	25.90	0.70
SEPTEMBER	(6)	18.15	11.85	19.33	26.10	0.70
OCTOBER	(6)	18.00	11.81	18.55	25.10	0.72
NOVEMBER	(6)	19.13	11.94	20.87	26.70	0.72
DECEMBER	(6)	19.44	12.13	21.55	23.70	0.82
AVERAGE		18.78	12.02	20.49	23.79	0.79
1981						
JANUARY	16.38	19.38	12.13	20.98	23.00	0.84
FEBRUARY	(6)	19.00	12.13	20.64	22.00	0.86
MARCH	(6)	18.75	12.00	19.28	23.10	0.81
APRIL	(6)	18.75	12.00	19.50	23.40	0.80
MAY		18.00			21.57	0.83
JUNE						
JULY						
AUGUST						
SEPTEMBER						
OCTOBER						
NOVEMBER						
DECEMBER						
AVERAGE						

(1) CRUDE OIL, F.O.B. PLANTS, QUOTED AT LOS ANGELES.
(2) CRUDE OIL, TANK CARS, F.O.B. EAST COAST PLANTS, QUOTED AT NEW YORK CITY.
(3) CRUDE OIL, F.O.B. PLANTS, QUOTED AT LOS ANGELES.
(4) CRUDE OIL, ANY ORIGIN, C.I.F. NORTHWEST EUROPE, QUOTED AT HAMBURG.
(5) CRUDE OIL, TANK CARS, F.O.B., DECATUR, ILL.
(6) SUPPLIES EXHAUSTED, NO QUOTES.

SOURCE: FOR U.S. PRICES: NMFS, RESOURCE STATISTICS DIVISION.
FOR N.W. EUROPE PRICES: OIL WORLD, ISTA MIELKE & CO., HAMBURG, FEDERAL REPUBLIC OF GERMANY.
FOR SOYBEAN OIL PRICES: FATS AND OILS SITUATION, U.S. DEPARTMENT OF AGRICULTURE.

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